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RESEARCH ARTICLE

First record of the giant mealybug *Drosicha mangiferae* (Hemiptera, Coccomorpha, Monophlebidae) in Egypt

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Abstract

Heavy infestations of various trees and ornamental plants by mealybug were observed on the Northern Coast of Egypt during 2024 and 2025. It was first found in one of the coastal villages, Alexandria Governorate. During this study, the insect was observed to expand and distributed in many neighboring villages. Morphological examination identified the species as the giant mealybug *Drosicha mangiferae*, an invasive species that has never before been reported from Egypt. This study documents *D. mangiferae* as a new addition to the Egyptian fauna and reports its presence for the first time in Egypt, the Mediterranean Basin, and the African continent. All diagnostic characteristics of the adult female were examined, illustrated, and photographed. Voucher specimens are deposited in the collection of the Department of Applied Entomology and Zoology, Faculty of Agriculture, Alexandria University.

Keywords

Drosicha mangiferae, Monophlebidae, Morphological study, invasive pests, Egypt.

Introduction

Scale insects (Hemiptera: Sternorrhyncha: Coccoidea) are considered to be the most destructive insects attacking many kinds of plants (main crops, horticulture and

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forestry) in several countries all over the world (Miller and Davidson 1990; Williams and Watson 1990; Miller et al. 2005).

Superfamily Coccoidea contains nearly 8000 species, belonging to 48 families. It is divided into two major informal groups, the archaeococcoids and neococcoids (Gullan and Martin 2009). The family name "Monophlebides" was first used by Signoret in 1877 then Maskell, 1880 raised this group to the family level. Morrison (1928) treated the monophlebids as a subfamily Monophlebinae within the Margarodidae. It is comprised 5 tribes: Drosichini, Iceryini, Laveiini, Monophlebini and Monophlebulini.

Monophlebidae is a family of scale insects commonly known as the giant scales or monophlebids. They occur in most parts of the world but more genera are found in the tropics than elsewhere (Kondo and Watson 2022). Giant scales occur on a wide range of host plants but most of these are trees or woody shrubs (Hanson and Miller 1984)

In Egypt, about 60 species of mealybugs were recorded until 2023 belong to Margarodidae, Monophlebidae and Pseudococcidae (1, 7, 54 species in respective). The mealybug species, *Planococcus ficus, Planococcus citri, Ferrisia virgatus, Maconellicoccus hirsutus, Saccharicoccus sacchari, Icerya aegyptiaca* and *Icerya purchase* are considered as serious pests of many economic important plant and ornamental plant in Egypt (Ezzat and Nada 1986; Mohammad and Ghabbour 2008; Mohammed and Moharum 2012; Amer et al. 2017; Abd-Rabou and Evans 2021; Evans and Abd-Rabou 2023).

In 2024, a heavy infestation of mango seedling by a mealybug was first noticed by Dr. Yehia Abdelghaffar Moustafa Seida in Karer Lagoon village on the Northern coast of Egypt, Alexandria Governorate (30.98806, 29.57948). During 2024 and 2025, this infestation spread to various fruit trees and ornamental plants across the northern coast. Morphological examination identified the species as the giant mealybug *Drosicha mangiferae*, which has never before been reported from Egypt, the Mediterranean Basin, or the African continent. This species is polyphagous and known from more than 70 host plant species (Srivastava 1997), and is regarded as a serious pest in India, Bangladesh, Pakistan, and China (Karar et al. 2010). In this study, *D. mangiferae* is newly recorded from Egypt, and its diagnostic characteristics are described, illustrated, and photographed

Materials and methods

Specimens collection

The morphology of family Monophlebidae as all members of superfamily Coccoidea depends on the female, therefore in this study the females of *D. mangiferae* (Hemiptera: Coccomorpha: Monophlebidae) specimens were collected by hand picking from the infested diverse plants of ornamental and fruit trees in North Coast of Egypt (30.98806, 29.57948). The specimens were preserved separately in 70% Ethyl alcohol

until mounting on slides in the Department of Applied Entomology and Zoology, Faculty of Agriculture, Alexandria University, Egypt.

Mounting slides

Samples were prepared on slides for microscopic examination. Specimens were boiled in 10% solution of caustic soda (NaOH) in water path for half an hour then washed by distilled water several times. The specimens were passed through a series of alcohol gradient concentrations from 75% to 95% and then transferred to clove oil for 15 minutes. The specimens were mounted in Euparal under stereoscopic binocular microscope (Zeiss, 475052-9901). Mounted slides were dried at 45°C for 2 weeks.

Specimens identification, photographing and illustration

The morphological characteristics were microscopically examined and identified. The photographs were taken by a Oppo A78 smartphone under stereo microscope and the details were studied. All the illustrated diagnostic characteristics were measured by using a micrometric lens attached to the stereoscopic microscope Model B-150 OPTIKA.

The following morphometric characteristics were measured: total length and width of insect; total antennal length, each antennal segments length, diameter of eye, length of cone shaped beak, length of each part of legs, length of thoracic and abdominal spiracles and diameter of multilocular different pores.

Terminology used in this study follows Morrison (1928), Jashenko (1994) and Gavrllov-Zimin (2018). The specimens were kept in the collection of the Department of Applied Entomology and Zoology, Faculty of Agriculture, Alexandria University, Egypt.

Results and discussion

The species was recorded infesting many trees and ornamental plants (Fig. 1), it was noticed shortly after planting a mango seedling in the home garden from which the samples were collected. Furthermore, the pest caused a significant disturbance to the occupants of nearby houses due to its proliferation throughout clothing, furnishings, and on walls.

***Drosicha mangiferae* (Stebbing, 1903)**

Redescription: The adult female elliptical or elongate oval in shape with anterior margin sinuate, posterior end rounded, dorsal side slightly convex while the ventral side flat, about 8 – 10 mm. long and about 2.5 – 4 mm in width. Orange in color. Body covered with greyish wax; legs, antennae and eyes dark brown (Figs 2a, 2b, Fig. 3).

Body derm: Derm rather thick, not sclerotized, internally with apodeme-like thickening at the inter-segmental areas, derm densely crowded with small multilocular

Figure 1. Adult females of *Drosicha mangifera* found on twigs of the host plant.

pore, pores serve as producers of the secreted substance which so frequently protects the insect. Multilocular pores with only four types, each about (0.007) mm in diameter, with thickened rim and one (rarely two) center, and with three, four, five or six loculi peripherally They considerably variable in type, size and distribution (Figs 2k, 3lc).

Setae: many types of setae varied greatly in length covering whole body, small, medium length to long setae with collared bases along the margin, and Macro-setae with a bulb–like base also found in posterior marginal areas of the body. The dorsal setae comparatively long and flagellate, while the ventral setae short and thin (Figs 2h, 3se).

Head: the head and thoracic segments so closely fused so it is difficult to determine the segmental limits. *Antennae:* stout, 1.5–1.8 mm long, from 7 – 8 segmented, the last and the third ones the longest (0.38 mm), while the rest of segments slightly equal. The scape broadest and quadrate, becoming narrow distally (Figs 2c, 3 an). Lengths of the antennal segments 1 to 8, measured in millimeter as follows: 0.20, 0.18, 0.25, 0.18, 0.15, 0.18, 0.18, mm for the first seven antennal segments, respectively, and 0.38 mm for the last one.

Eyes: simple and conical in shape, about 0.88 mm. in diameter (Fig. 3e). *Beak:* short, stout, conical in shape, and with three segmented (Figs 2d, 3b)

Legs: all well-developed (Fig. 2g), femur comparatively swollen and stout (0.75 mm) in length, tibia slightly longer than femur (0.95 mm) provided with stout spines, while tarsus less than half the length of tibia (0.48 mm), claw (0.77 mm), strong, curved, and bears two short setal like digitules which arise one on each side near the claw base, digitules thin, not reaching tip of claw (Fig. 3cl).

Figure 2. The adult female of *Drosicha mangiferae*: **a** dorsal view; **b** ventral view; **c** antenna; **d** beak; **e** thoracic spiracle; **f** abdominal spiracle; **g** hind leg; **h** posterior part of abdomen; **i** valva opening; **j** cicatrices; **k** types of multilocualr pores.

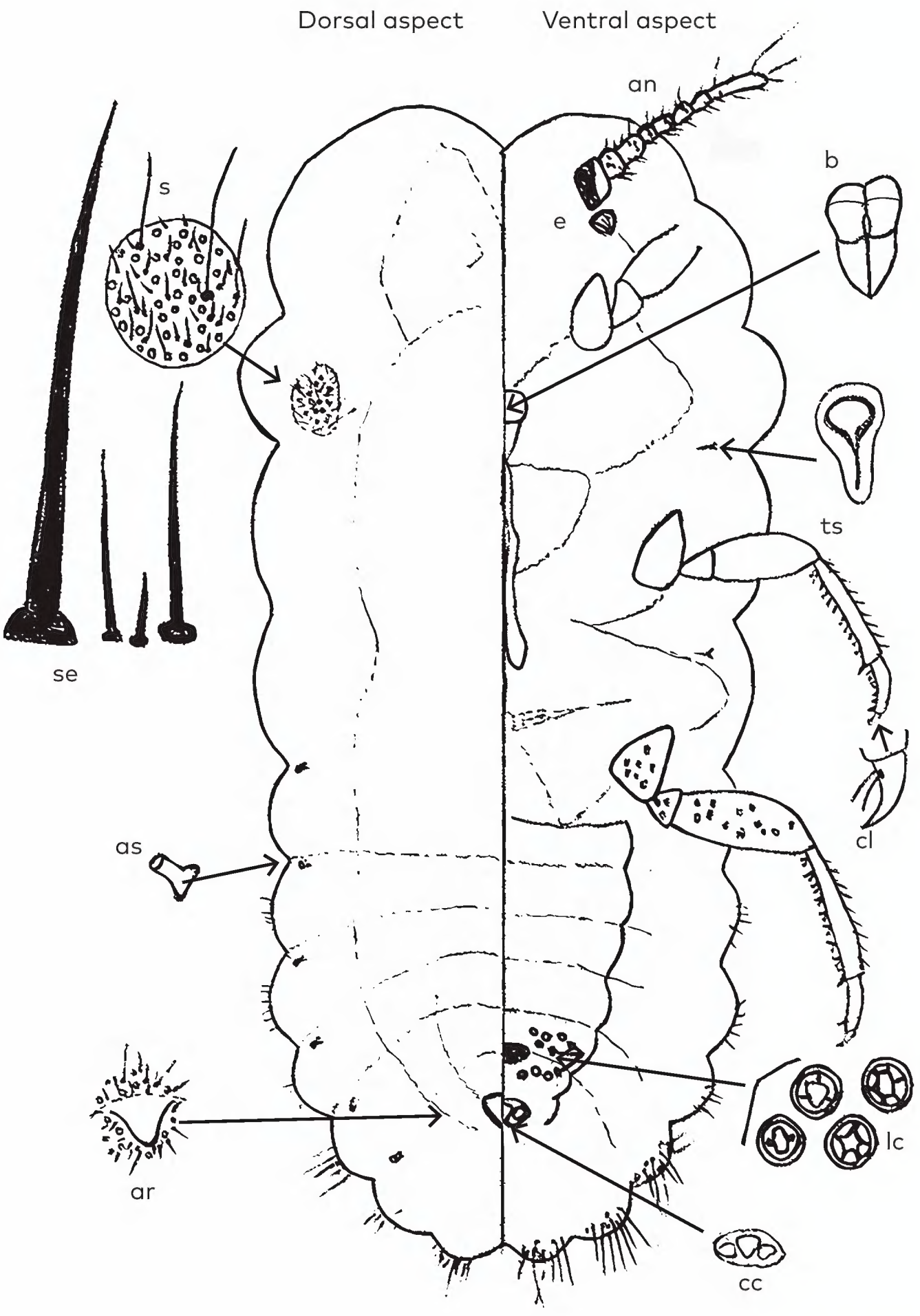

Figure 3. Diagram of the adult female of *Drosicha mangiferae*: **an** Antenna; **ar** anal ring; **as** abdominal spiracle; **b** beak; **cc** cicatrices; **cl** claw and digitule; **e** eye; **lc** types of loculi; **s** skin; **se** types of setae; **ts** thoracic spiracle.

Thoracic spiracles: Two pairs of large heavily chitnized ventral thoracic spiracles, all of approximately equal length (0.16 mm), clearly appear between second and third thoracic segments (Figs 2e, 3ts)

Abdomin: The abdominal segmentation usually rather well defined. Abdominal spiracles dorsal, seven pairs in number, much smaller than thoracic ones, present on abdominal segments II–VIII, they are relatively simple with a short cylindrical narrow tube, about 0.01mm diameter (Figs 2f, 3as).

Gonopore: (Vulva) lies ventrally on the posterior margin of the eighth abdominal segment (Fig. 2i). Vulvar opening surrounding with extreme short setae and multilocualr pores. These pores form medial to sub medial band anterior to vulvar opening (Fig. 3lc). The presence of vulva is an indication of full maturity of the adult female.

Cicatrices: Three large cicatrices appear ventrally posterior to vulva (often difficult to see), it is round to oval clear membranous area without pores or setae, median cicatrices largest, elongate, lateral cicatrices irregular in shape (Figs 2j, 3cc).

Anal pore: simple U-shaped lies on the dorsal side of body close the posterior apex of abdomen, surrounded by numerous long setae, usually with a sclerotized ring (Fig. 3ar).

Remarks

This genus was intercepted 26 times at U. S. ports-of-entry between 1995 and 2012, as *Drosicha* sp., with specimens originating from Australia, China, India, Indonesia, Pakistan, The Philipines, Taiwan, and Thailand. Also, the specimens examined in quarantine from plants: Australia (*Chamelaucium*); China (*Dimocarpus, Litchi*); India (*Murraya, Rosa*); Indonesia (unknown host); Japan (*Azalea*, *Camellia, Pinus*); Malaysia (*Nepenthes*); Nepal (*Glycine*); Pakistan (*Litchi*); The Philippines (*Annona*, *Codiaeum, Corynocarpus, Kalmia, Lansium, Mangifera, Psidium, Spondias, Tamarindus*); Taiwan (*Litchi*); Thailand (*Lansium, Litchi*). This genus occurs in the Australasian, Oriental, and Palaearctic zoogeographic regions, on a variety of hosts (U.S. quarantine notes).

Material Examined:
Egypt: 10 ♀, Alexandria, SITEi [30.98806 N,29.57948E], 00.VIII.2024, leg. Dr. Yehia Abdelghaffar Moustafa Seida

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